MULTIMEDIA **UNIVERSITY**

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2018/2019

BFN3144 – FINANCIAL DERIVATIVES
(All sections / Groups)

22 OCTOBER 2018
9.00 A.M. -11.00 A.M.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **4** pages. There are a total of **4** questions.

2. Answer **ALL** questions.

3. Marks are shown at the end of each question.

Answer all questions in the answer booklet provided.

QUESTION 1 (25 MARKS)

(a) Explain the benefits of using FTSE Bursa Malaysia KLCI Options (OKLI).   (8 marks)

(b) Given the information below, answer the questions (i), (ii) and (iii).

| Month | KLCI Futures | | Crude Palm Oil Futures | | GOLD Futures | | KLCI Options | | Options on Crude Palm Oil Futures | |
	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest
Jan/18	177,718	30,990	1,010,493	236,350	92	61	1,550	262	13,195	26,101
Feb/18	182,562	22,821	678,709	216,373	70	60	507	247	5,101	22,071
Mar/18	185,072	26,179	1,026,249	225,941	105	55	571	385	13,250	30,641
Apr/18	215,665	28,822	841,954	232,142	60	37	300	69	3,640	23,721
May/18	255,464	28,989	765,264	238,428	51	34	368	162	1,930	8,775
Jun/18	261,858	29,474	914,149	250,973	30	23	1,085	268	3,600	9,175

Source: Bursa Malaysia's website as on 12 July 2018

  (i) Given the derivatives instruments above, which one(s) can be used to hedge against
      price risk of owning equity?   (4 marks)

  (ii) Which is the most important instrument in Malaysia?   (4 marks)

  (iii) Differentiate between volume and open interest.   (4 marks)

(c) Explain put-call parity function.   (5 marks)

QUESTION 2 (25 MARKS)

(a) As the fund manager of Alinvestment Berhad, you manage a portfolio amounting to
    RM500 million. In your portfolio, it includes 300 units of NetTech stocks. This
    NetTech stock price is stable and it hardly provides any capital gains. You would like to
    keep this stock in your portfolio in order to keep a well-balanced portfolio. Discuss the
    best strategy that you could implement to have revenue enhancement given the current
    market price for NetTech is RM6.00.

Call options
NetTech RM5.80 @ RM0.15
NetTech RM6.00 @ RM0.13
NetTech RM6.50 @ RM0.10

Put Options
NetTech RM5.80 @ RM0.10
NetTech RM6.00 @ RM0.13
NetTech RM6.50 @ RM0.15

Continued...

You are required to answer the following questions:

(i) Suggest a strategy that meets the above objective.   (6 marks)

(ii) Fill in the payoff table below.

S_T	Spot Position	Option Position	Value of combined position
5.00			
5.50			
5.80			
6.00			
6.50			
6.90			
7.00			
7.20			
7.40			

(8 marks)

(iii) Draw the payoff diagram (Label the strikes prices, break-even point and the maximum profit).   (6 marks)

(b) Suggest two bullish option strategies that you can use.   (5 marks)

QUESTION 3 (25 MARKS)

(a) Below are the Greeks of option pricing model, explain each of them.
    (i) Theta   (4 marks)
    (ii) Delta   (4 marks)
    (iii) Vega   (4 marks)

(b) Black Scholes option pricing model is a continuous time model which is built based on some assumptions. Discuss any **four** assumptions which have been incorporated in the model and state the two which are unrealistic.   (6 marks)

(c) Consider a binomial option pricing model in which the current stock price, RM4 can either go up by 5% percent or down by 3 percent with 60% and 40% probability. The risk-free rate is 2 percent per year. Assume the price changes twice per year, calculate the call price with an exercise price of RM4.   (7 marks)

Continued...

QUESTION 4 (25 MARKS)

(a) Your company, TopGlue Berhad plans to use interest rate swap to make profit from the upward trend of interest rate as the central bank will raise the interest rate in the next 3 months.

    (i) Discuss how you can enter into the swap contract whether as fixed rate or floating rate payer.   (6 marks)

    (ii) Given the notional amount of this swap is RM20 million, 6-year maturity with semiannual interest payments in between. Calculate the profit/loss if the interest rate goes up 1.5% over the first 6 months. (Assume the fixed rate is the same as the floating rate at the start of the swap contract).   (6 marks)

(b) Discuss the similarities and differences between total return swap and loan portfolio swap.   (8 marks)

(c) Explain why the notional principal is exchanged in a currency swap but it is not exchanged in an interest rate swap.   (5 marks)

End of Page

Table: Cumulative Normal Distribution

d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)
-3.00	.0013	-1.58	.0571	-0.76	.2236	0.06	.5239	0.86	.8051	1.66	.9515
-2.95	.0016	-1.56	.0594	-0.74	.2297	0.08	.5319	0.88	.8106	1.68	.9535
-2.90	.0019	-1.54	.0618	-0.72	.2358	0.10	.5398	0.90	.8159	1.70	.9554
-2.85	.0022	-1.52	.0643	-0.70	.2420	0.12	.5478	0.92	.8212	1.72	.9573
-2.80	.0026	-1.50	.0668	-0.68	.2483	0.14	.5557	0.94	.8264	1.74	.9591
-2.75	.0030	-1.48	.0694	-0.66	.2546	0.16	.5636	0.96	.8315	1.76	.9608
-2.70	.0035	-1.46	.0721	-0.64	.2611	0.18	.5714	0.98	.8365	1.78	.9625
-2.65	.0040	-1.44	.0749	-0.62	.2676	0.20	.5793	1.00	.8414	1.80	.9641
-2.60	.0047	-1.42	.0778	-0.60	.2743	0.22	.5871	1.02	.8461	1.82	.9656
-2.55	.0054	-1.40	.0808	-0.58	.2810	0.24	.5948	1.04	.8508	1.84	.9671
-2.50	.0062	-1.38	.0838	-0.56	.2877	0.26	.6026	1.06	.8554	1.86	.9686
-2.45	.0071	-1.36	.0869	-0.54	.2946	0.28	.6103	1.08	.8599	1.88	.9699
-2.40	.0082	-1.34	.0901	-0.52	.3015	0.30	.6179	1.10	.8643	1.90	.9713
-2.35	.0094	-1.32	.0934	-0.50	.3085	0.32	.6255	1.12	.8686	1.92	.9726
-2.30	.0107	-1.30	.0968	-0.48	.3156	0.34	.6331	1.14	.8729	1.94	.9738
-2.25	.0122	-1.28	.1003	-0.46	.3228	0.36	.6406	1.16	.8770	1.96	.9750
-2.20	.0139	-1.26	.1038	-0.44	.3300	0.38	.6480	1.18	.8810	1.98	.9761
-2.15	.0158	-1.24	.1075	-0.42	.3373	0.40	.6554	1.20	.8849	2.00	.9772
-2.10	.0179	-1.22	.1112	-0.40	.3446	0.42	.6628	1.22	.8888	2.05	.9798
-2.05	.0202	-1.20	.1151	-0.38	.3520	0.44	.6700	1.24	.8925	2.10	.9821
-2.00	.0228	-1.18	.1190	-0.36	.3594	0.46	.6773	1.26	.8962	2.15	.9842
-1.98	.0239	-1.16	.1230	-0.34	.3669	0.48	.6844	1.28	.8997	2.20	.9861
-1.96	.0250	-1.14	.1271	-0.32	.3745	0.50	.6915	1.30	.9032	2.25	.9878
-1.94	.0262	-1.12	.1314	-0.30	.3821	0.52	.6985	1.32	.9066	2.30	.9893
-1.92	.0274	-1.10	.1357	-0.28	.3897	0.54	.7054	1.34	.9099	2.35	.9906
-1.90	.0287	-1.08	.1401	-0.26	.3974	0.56	.7123	1.36	.9131	2.40	.9918
-1.88	.0301	-1.06	.1446	-0.24	.4052	0.58	.7191	1.38	.9162	2.45	.9929
-1.86	.0314	-1.04	.1492	-0.22	.4129	0.60	.7258	1.40	.9192	2.50	.9938
-1.84	.0329	-1.02	.1539	-0.20	.4207	0.62	.7324	1.42	.9222	2.55	.9946
-1.82	.0344	-1.00	.1587	-0.18	.4286	0.64	.7389	1.44	.9251	2.60	.9953
-1.80	.0359	-0.98	.1635	-0.16	.4365	0.66	.7454	1.46	.9279	2.65	.9960
-1.78	.0375	-0.96	.1685	-0.14	.4443	0.68	.7518	1.48	.9306	2.70	.9965
-1.76	.0392	-0.94	.1736	-0.12	.4523	0.70	.7580	1.50	.9332	2.75	.9970
-1.74	.0409	-0.92	.1788	-0.10	.4602	0.72	.7642	1.52	.9357	2.80	.9974
-1.72	.0427	-0.90	.1841	-0.08	.4681	0.74	.7704	1.54	.9382	2.85	.9978
-1.70	.0446	-0.88	.1894	-0.06	.4761	0.76	.7764	1.56	.9406	2.90	.9981
-1.68	.0465	-0.86	.1949	-0.04	.4841	0.78	.7823	1.58	.9429	2.95	.9984
-1.66	.0485	-0.84	.2005	-0.02	.4920	0.80	.7882	1.60	.9452	3.00	.9986
-1.64	.0505	-0.82	.2061	0.00	.5000	0.82	.7939	1.62	.9474	3.05	.9989
-1.62	.0526	-0.80	.2119	0.02	.5080	0.84	.7996	1.64	.9495		
-1.60	.0548	-0.78	.2177	0.04	.5160						

This table shows the probability [N(d)] of observing a value less than or equal to d. For example, as illustrated, if d is −.24, then N(d) is .4052.